

## REMARKS

### A. Status of the Application

A final Office Action issued on January 19, 2005. This Submission is filed concurrently with an RCE and addresses the Examiner's remarks in the final Office Action. Applicants have carefully considered the matters raised by the Examiner in the outstanding Office Action but remain of the position that patentable subject matter is present. Applicants respectfully request reconsideration of the Examiner's position based on the Declaration of Mr. Hiroshi Yamazaki, the amendments to the specification and the following remarks.

### B. The Invention

The present invention is directed to a toner for developing an electrostatic latent image. The toner of the invention has superior image density, fog density and half tone unevenness after long term copying.

In one of the novel aspects of the invention, less than 5.0% of the toner particles have a circle corresponding diameter of from not less than 0.60 to less than 1.00  $\mu\text{m}$ . The Inventors have discovered that when the content exceeds 5.0% in number, adhesion of the fine particles to the developer conveying

member, the photoreceptor and the carrier cannot be solved (page 13, lines 3-9).

C. Claim Status

Claims 1 and 6-9 are presented for further prosecution. Claims 2-5 have been withdrawn from consideration. No claim amendments have been made at this time.

D. Specification Amendments

Page 13 has been amended to correct a typographical error. Support for this amendment can be found at page 11, line 21.

E. The Final Office Action

Claims 1 and 6-8 had been rejected as being anticipated by Nozawa (US 6,555,281). Claims 1 and 6-8 had been rejected as being anticipated by Hashimoto (US 6,610,454) considered in view of Yachi (US 5,773,185). Claim 9 had been rejected as being unpatentable over Hashimoto in view of Yachi.

The Examiner had taken the position that Nozawa and Hashimoto each inherently teach less than 5.0% of the toner particles having a diameter of not less than 0.60 to less than 1.00  $\mu\text{m}$  as recited in claim 1 (page 3, line 8 of the outstanding Office Action and page 3, line 16 of the September 1, 2004 Office Action). Yachi had been cited to teach the addition of a

dispersant to give a sharp particle distribution (page 5, lines 3-11 of the outstanding Office Action).

1. Nozawa and Hashimoto do not inherently teach less than 5.0% of the toner particles having a diameter of not less than 0.60 to less than 1.0  $\mu\text{m}$

Applicants have enclosed a Declaration of Mr. Hiroshi Yamazaki to demonstrate that the toner particles of Nozawa and Hashimoto do not inherently meet the limitations of claim 1. Applicants note that the Declaration is presently unexecuted, however, it is requested that the Declaration be fully considered since the information contained in the Declaration originated with Mr. Yamazaki and is entirely reliable. An executed copy of the Declaration will be forwarded as soon as it becomes available.

Mr. Yamazaki prepared 6 toner particle samples and labeled the samples Nozawa 1, Inventive 1, Hashimoto 1, Inventive 2, Hashimoto 2 and Inventive 3 as shown in Table 1 of the Declaration.

The toner particles of Nozawa 1 were prepared in accordance with Example 34 in col. 37 of Nozawa. Example 34 of Nozawa had been specifically cited by the Examiner as inherently teaching the present invention (page 3, lines 5-11 of the Office Action). The toner particles of Inventive 1 were prepared similarly to Nozawa 1, except that the guide vane angle was changed.

The toner particles of Hashimoto 1 were prepared in accordance with Example 17 in col. 53 of Hashimoto. Example 17 had been specifically cited by the Examiner in the outstanding Office Action (page 4, paragraphs 4-5). The toner particles of Inventive 2 were prepared similarly to Hashimoto 1, except that the rotation speed of the homomixer was changed.

The toner particles of Hashimoto 2 were prepared in accordance with Example 29 in col. 62 of Hashimoto. Example 29 of Hashimoto had been specifically cited by the Examiner as inherently teaching the present invention (page 3, paragraph 4 of the September 1, 2004 Office Action). The toner particles of Inventive 3 were prepared similarly to Hashimoto 2, except that the guide vane angle was changed.

Mr. Yamazaki evaluated Nozawa 1, Inventive 1, Hashimoto 1, Inventive 2, Hashimoto 2 and Inventive 3 to determine the ratio of toner particles having a diameter of not less than 0.60 to less than 1.0  $\mu\text{m}$ . He also evaluated these samples to determine SF-1 and SF-2. Nozawa 1 and Hashimoto 1 were additionally

evaluated to determine the size distribution N. The results of these evaluations are illustrated in Table 1 of the Declaration.

Table 1 demonstrates that the toner particles of Nozawa and Hashimoto do not inherently meet the limitations of claim 1. The toner particles of Nozawa 1, Hashimoto 1 and Hashimoto 2 each had a ratio of toner particles outside the range of claim 1, namely, Nozawa 1 had a ratio of 5.2%, Hashimoto 1 had a ratio of 5.5% and Hashimoto 2 had a ratio of 5.1%.

Mr. Yamazaki has therefore demonstrated that the toner particles of Nozawa and Hashimoto do not inherently satisfy the limitations of claim 1. It is respectfully submitted that Nozawa and Hashimoto do not anticipate the present invention.

2. The toner particles of the present invention are superior to the toner particles of Nozawa and Hashimoto

Mr. Yamazaki added external additives to the toner particles of Nozawa 1, Inventive 1, Hashimoto 1, Inventive 2, Hashimoto 2 and Inventive 3 as explained in paragraph 12 of the Declaration. Toners labeled Nozawa 1A, Inventive 1A, Hashimoto 1A, Inventive 2A, Hashimoto 2A and Inventive 3A were respectively produced. The toners of Nozawa 1A, Inventive 1A, Hashimoto 1A, Inventive 2A, Hashimoto 2A and Inventive 3A were evaluated for image density, fog density and half tone

unevenness. The results of these evaluations are shown in Table 2 of the Declaration.

As shown in Table 2, the toners of Nozawa and Hashimoto falling outside the range of claim 1 are inferior to the toners of the present invention. For example, Table 2 shows that Inventive 2A was more stable than Nozawa 1A in terms of image density after 50,000 copies, fog density after 50,000 copies and half tone unevenness after 50,000 copies. The superiority of the present invention can also be seen by comparing Inventive 2A with Hashimoto 1A and by comparing Inventive 3A with Hashimoto 2A.

Applicants therefore respectfully submit that Mr. Yamazaki has demonstrated that the toner of present invention is superior to the toners of Nozawa and Hashimoto. Nozawa and Hashimoto do not teach or suggest the ratio of toner particles recited in claim 1 and the significance of this ratio demonstrated by Table 2 of the Declaration. It is submitted that the present invention is patentable over Nozawa and Hashimoto.

3. Yachi does not teach or suggest the ratio of toner particles recited in claim 1

Yachi had been cited to teach the addition of a dispersant to give a sharp particle distribution. Yachi does not teach or suggest the ratio of toner particles recited in claim 1. It is

respectfully submitted that the present invention is patentable over all the cited references taken alone or in combination.

F. Extension of Time

Applicants hereby request a 3-month extension of time. PTO 2038 is enclosed to cover both the RCE and extension fees.

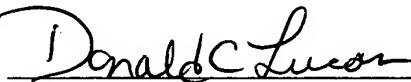
G. Conclusion

In view of the foregoing and the enclosed, it is respectfully submitted that the application is in condition for allowance and such action is respectfully requested. Should any further fees be necessary in order to maintain this Application in pending condition, appropriate requests are hereby made and authorization is given to debit Account # 02-2275.

Respectfully submitted,

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Encl: Executed PTO Form 2038  
Unexecuted copy of Declaration of Mr. Yamazaki



Our ref: KON-1707

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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In re Application of: N. HIROSE et al.: Art Unit : 1756

Serial No. : 10/056,577

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Examiner : C. D.

Filed : January 24, 2002

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Rodee

Title : TONER FOR FORMING  
ELECTROSTATIC IMAGE

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**DECLARATION**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

S i r:

I, Hiroshi Yamazaki, hereby declare and say as follows:

1. I am one of the Inventors of the present invention.



2. I received a Masters Degree in Applied Chemistry from Yokohama National University in March 1979. Since April of 1979, I have been employed by Konica Corporation, the Assignee of the present invention. During my employment at Konica, I have engaged in research and development of electrophotographic materials.
3. I am aware that the present invention has been rejected based on Nozawa (US 6,555,281) and Hashimoto (US 6,610,454). Tests have been performed and are reported herein to demonstrate that the materials of Nozawa and Hashimoto do not inherently contain toner particles less than 5.0% in number having a circle corresponding diameter of from not less than 0.60 to less than 1.00. These tests were performed by myself or under my supervision and control.
4. The toner particles of Example 34 of Nozawa were prepared in accordance with the description of Examples 33-35 in col. 37 of Nozawa. Since Nozawa is silent concerning the type of pulverization device and pneumatic classifier, I type mill IDS-2 was employed as the pulverizer (produced by Nippon Pneumatic Mfg. Co., Ltd.) and Mikroplex 132 MP was employed as the pneumatic classifier (produced by Yaskawa

Electric Manufacturing Co. Ltd.). A coarsely crushed melt-kneaded product was finely pulverized using the I type mill IDS-2 pulverizer under compressed air pressure at 6.0 kg/cm<sup>2</sup>G at a feed supply rate of 13 kg/hr. After pulverization, classification was performed using the Mikroplex 132 MP classifier under a rotation rate of 12,000 rpm and a guide vane angle of 8°. The prepared toner particles were labeled "Nozawa 1" in the attached Table 1.

5. The toner particles labeled "Inventive 1" in Table 1 were prepared in the same manner as the toner particles of Nozawa 1, except that the guide vane angle was changed to 8.5°.
6. The toner particles of Example 17 of Hashimoto were prepared in accordance with the description in col. 53 of Hashimoto. The prepared toner particles were labeled "Hashimoto 1" in Table 1.
7. The toner particles labeled "Inventive 2" in Table 1 were prepared in the same manner as the toner particles of Hashimoto 1, except that the rotation speed of the TK-type homomixer was changed to 11600 rpm during granulation of the polymerizable monomer composition.

8. The toner particles of Example 29 of Hashimoto were prepared in accordance with the description in col. 62 of Hashimoto. Since Hashimoto is silent concerning the type of pulverization device and pneumatic classifier, I type mill IDS-2 and Mikroplex 132 MP were again employed as the pulverizer and pneumatic classifier. The crushed melt-kneaded product was pulverized using the I type mill IDS-2 pulverizer under compressed air pressure at 6.0 kg/cm<sup>2</sup>G at a feed supply rate of 13 kg/hr. After pulverization, classification was performed using the Mikroplex 132 MP classifier under a rotation rate of 11,200 rpm and a guide vane angle of 7°. The prepared toner particles were labeled "Hashimoto 2" in the attached Table 1.
9. The toner particles labeled "Inventive 3" in Table 1 were prepared in the same manner as the toner particles of Hashimoto 2, except that the guide vane angle was changed to 7.5°.
10. The toner particles of Nozawa 1, Inventive 1, Hashimoto 1, Inventive 2, Hashimoto 2 and Inventive 3 were evaluated and the results of the evaluations are shown in Table 1. The ratio of toner particles having a diameter of 0.60-1.00  $\mu\text{m}$  was measured using the analyzing apparatus FPIA-2000

described at page 11, lines 17-22 of the present invention. SF-1 and SF-2 were measured by observing 100 particles using an electron microscope with a 2000x magnification and analyzing the image as described at page 11, lines 3-11 of the present invention. For Nozawa 1 and Inventive 1, size distribution N was measured using the COULTER MULTICIZER having the 100  $\mu\text{m}$  aperture described in col. 20 of Nozawa.

11. As shown in Table 1, Nozawa 1 prepared in accordance with the teachings of Nozawa had a ratio of toner particles of 5.2%, Hashimoto 1 prepared in accordance with the teachings of Hashimoto had a ratio of toner particles of 5.5%, and Hashimoto 2 prepared in accordance with the teachings of Hashimoto had a ratio of toner particles of 5.1%. Each of these ratios is above the range recited in claim 1 of the present invention.

12. After measurement of the properties illustrated in Table 1, Nozawa 1 and Inventive 1 were mixed with external additives of 1.0% by weight of hydrophobic silica particles (number average primary particle size of 12 nm), 0.15% by weight of hydrophobic titanium oxide particles (number average primary particle size of 20 nm), and 0.8% by weight of hydrophobic titanium oxide particles (number average

primary particle size of 200 nm) using a Henschel mixer. Hashimoto 1, Inventive 2, Hashimoto 2 and Inventive 3 were mixed with the external additives using the Henschel mixer described at page 46 lines 1-7 of the present invention. The obtained toners were respectively labeled Nozawa 1A, Inventive 1A, Hashimoto 1A, Inventive 2A, Hashimoto 2A and Inventive 3A.

13. Nozawa 1A, Inventive 1A, Hashimoto 1A, Inventive 2A, Hashimoto 2A and Inventive 3A were evaluated for image density, fog density and half-toner unevenness in the manner described at page 46, line 11 to page 49, line 7 of the present invention, except that a complimentary color filter was employed in the densitometer. The results of these evaluations are illustrated in Table 2.

14. As shown in Table 2, each of the Inventive toners were superior to the toners prepared in accordance with Nozawa and Hashimoto in terms of image density after 50,000 copies, fog density after 50,000 copies and half tone unevenness after 50,000 copies. For instance, the toner of Inventive 1A had less change in image density after 50,000 copies, fog density after 50,000 copies and half tone unevenness after 50,000 copies compared to the toner of

Nozawa 1A. The superiority of the Inventive toners can also be seen by comparing the toner of Inventive 2A with the toner of Hashimoto 1A, and by comparing the toner of Inventive 3A with the toner of Hashimoto 2A.

15. I believe that the data presented in this Declaration is surprising and unexpected based on the teachings of Nozawa and Hashimoto.

It is declared by undersigned that all statements made herein of undersigned's own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the U.S. Code; and that such willful false statements may jeopardize the validity of this Application or any patent issuing thereon.

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Hiroshi Yamazaki

Dated: This day of , 2005.

Encl: Table 1  
Table 2

Table 1

	N (2-4 $\mu\text{m}$ )%	Ratio of toner particles having a diameter of 0.60-1.00 $\mu\text{m}$ (%)	SF-1	SF-2	SF-1/SF-2
Nozawa 1	8.00	5.2	160	136	1.18
Inventive 1	7.80	4.8	160	135	1.19
Hashimoto 1	n/a	5.5	135	111	1.22
Inventive 2	n/a	4.7	137	112	1.22
Hashimoto 2	n/a	5.1	158	140	1.13
Inventive 3	n/a	4.6	160	141	1.13

Table 2

	Image Density		Fog Density		Half tone Unevenness	
	Initial	After 50,000	Initial	After 50,000	Initial	After 50,000
Nozawa 1A	1.40	1.42	0.001	0.015	A	C
Inventive 1A	1.40	1.41	0.001	0.004	A	A
Hashimoto 1A	1.40	1.43	0.001	0.012	A	C
Inventive 2A	1.40	1.41	0.001	0.003	A	A
Hashimoto 2A	1.40	1.44	0.001	0.020	B	D
Inventive 3A	1.40	1.40	0.001	0.004	B	B